Crafting an Interdisciplinary Approach to Geospatial Medicine

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Center for Geospatial Medicine Framework

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Our Collaborative Mission

To develop sound and systematic, spatially-based methods for analyzing the causal pathways through which environmental, social, and host factor domains jointly shape health and well-being.

- **Focus on health disparities**
- **Employ advanced spatial analytic approaches**
- **Pregnancy outcomes as prototype health endpoints**

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Motivation for Our Efforts

- **Why do we care about health disparities?**

- **Why do we think spatial analysis will provide important insights regarding health disparities?**

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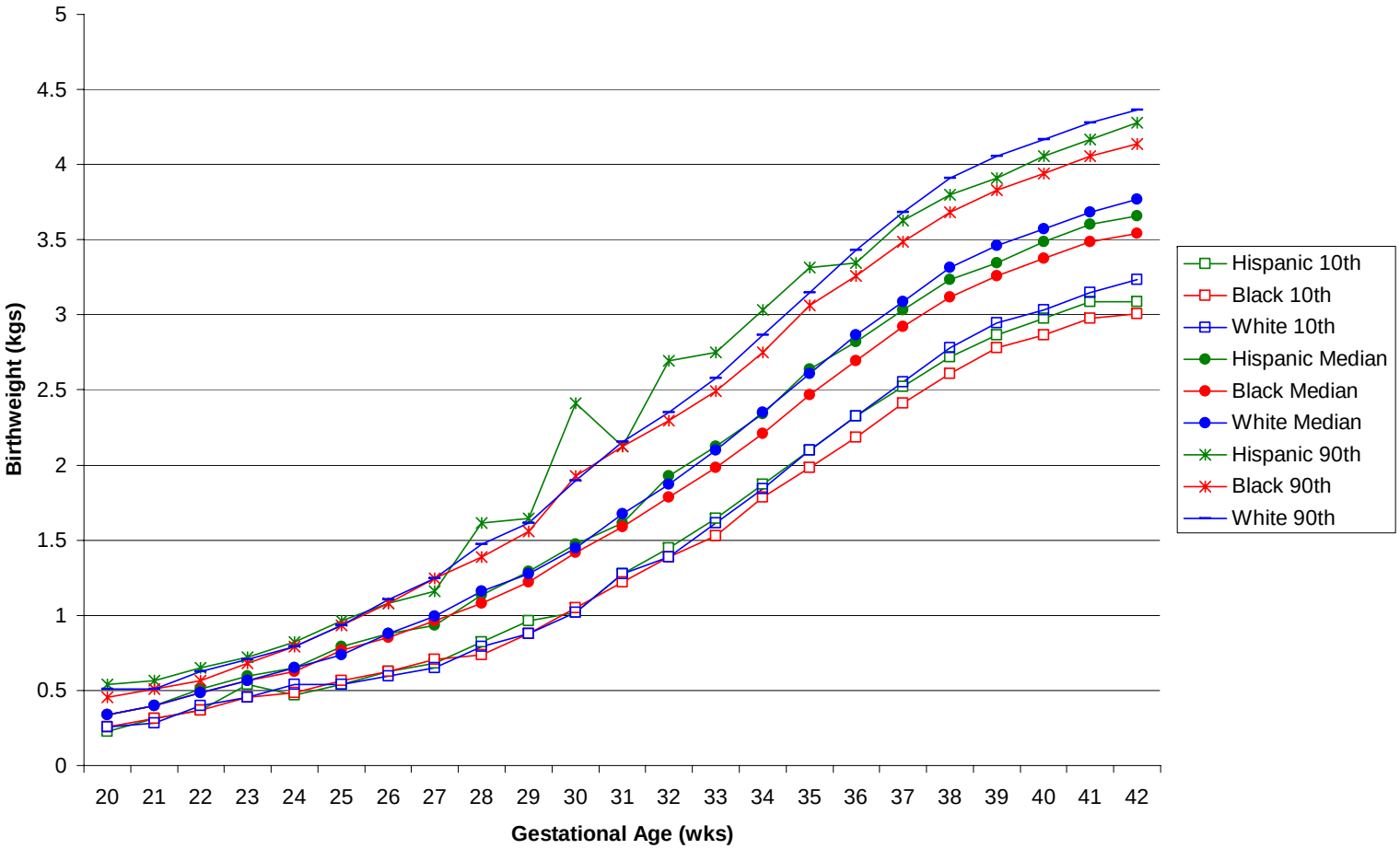
Racial Differences in Birthweight x Gestation

Figure 3. Gestational Age vs. Birthweight Percentile Curves by Maternal Race



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Motivation for Our Efforts

- **Why do we care about health disparities?**

- **Why do we think spatial analysis will provide important insights regarding health disparities?**

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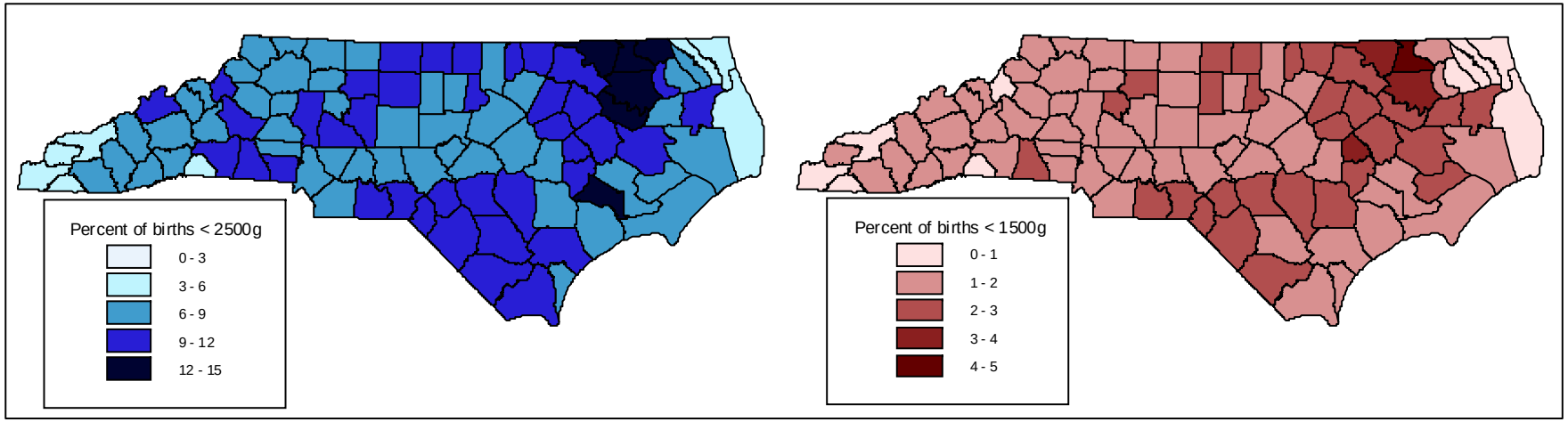
Spatial Patterns

Low Birthweight

Very Low Birthweight



NC State Center for Health Statistics, 1999-2003 Births

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Our Interdisciplinary Team

- Expertise (evolved over time)
  - molecular biology
  - genetic epidemiology
  - behavioral science
  - social epidemiology
  - obstetrics/pediatrics/neonatology
  - environmental science
  - statistics
  - spatial mapping
- Institutions
  - Nicholas School of the Environment and Earth Sciences
  - Sanford Institute of Public Policy
  - Institute of Statistics and Decision Sciences
  - Center for Human Genetics (DUMC)
  - Behavioral Medicine Research Center (DUMC)
  - Department of Obstetrics (DUMC)
  - Department of Pediatrics (DUMC)
- Institutional support

Arts & Sciences

DUMC

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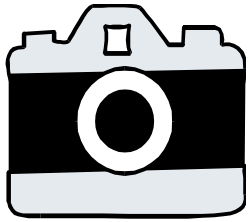
Strategies for Successful Interdisciplinary Teams

- Inter- versus multi-disciplinary perspectives (standard tools versus transmogrification)
  - Began by having each collaborator provide background on their research



  - Recognize collaborators' contexts and vested interests
  - Articulate a clear collaborative mission

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Conceptual Framework/Collaborative Mission

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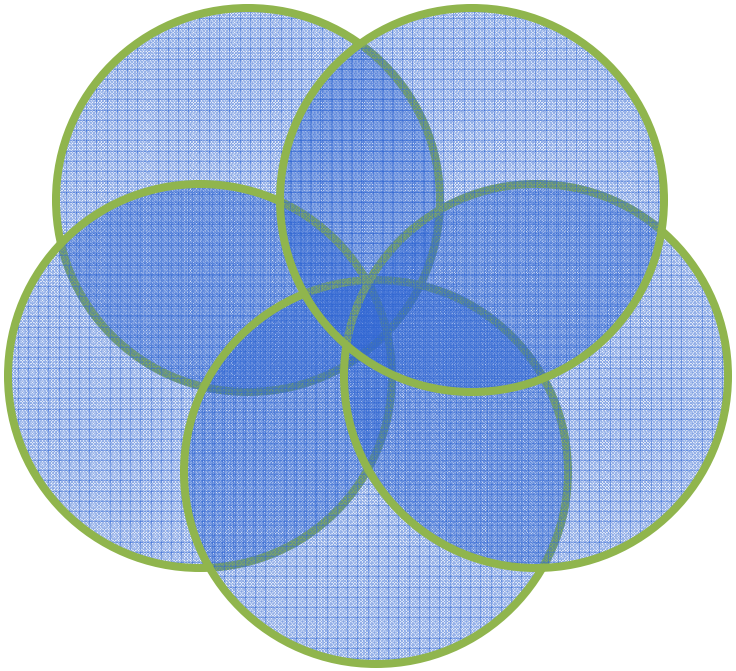
Strategies for Successful Interdisciplinary Teams

- Inter- versus multi-disciplinary perspectives
- Translation



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Strategies for Successful Interdisciplinary Teams

- Inter- versus multi-disciplinary perspectives
- Translation
- Create organizational infrastructure to support collective efforts
  - Internal website
  - Working groups
  - Regular meetings scheduled well in advance
  - Size/composition/science/administration

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Strategies for Successful Interdisciplinary Teams

- Inter- versus multi-disciplinary perspectives
- Translation
- Create organizational infrastructure to support collective efforts
- Make meeting time matter
  - Clear (but flexible) agenda
  - Meeting covers topics that must be covered in person
  - Stay on task

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Strategies for Successful Interdisciplinary Teams

- Inter- versus multi-disciplinary perspectives
- Translation
- Create organizational infrastructure to support collective efforts
- Make meeting time matter
- Delineate action items including responsibility and timeline
  - Pilot project
  - Abstracts
  - Proposals
  - Papers

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Strategies for Successful Interdisciplinary Teams

- Inter- versus multi-disciplinary perspectives
- Translation
- Create organizational infrastructure
- Make meeting time matter
- Delineate action items including responsibility and timeline
- Provide timely refreshments

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Strategies for Successful Interdisciplinary Teams

- Inter- versus multi-disciplinary perspectives
- Translation
- Create organizational infrastructure
- Make meeting time matter
- Delineate action items including responsibility and timeline
- Provide timely refreshments
- Smart people matter, but so do personalities

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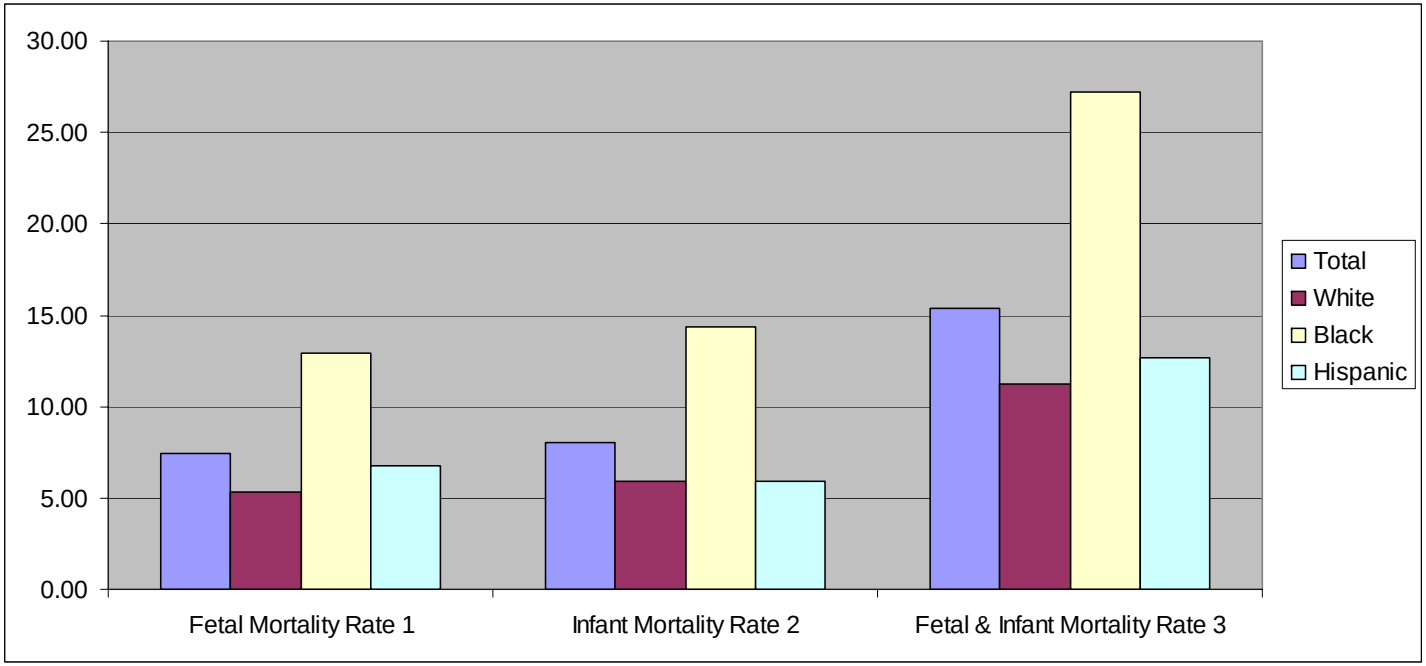
Fetal and Infant Mortality Rates by Race in NC



1 = Fetal Deaths/(Live Births + Fetal Deaths) * 1000
2 = (Infant Deaths/Live Births) * 1000
3 = ((Fetal Deaths + Infant Deaths)/(Fetal Deaths + Live Births))*1000

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